INDIA WEATHER REVIEW, 1967

ANNUAL SUMMARY

PART - B

SNOWFALL

CONTENTS

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INDIA WEATHER REVIEW, 1967

ANNUAL SUMMARY - PART B

S N O W F A L L

This part contains a summary of the reports of snowfall in the mountainous regions to the north of India based on (a) records of snowfall observations made at the observatories and (b) reports collected by local officers from the local residents, headmen of villages or from travellers who have passed through the region, and then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in metres or centimetres. At places provided with raingauges the snow collected in the gauge, is melted and measured as rain. The heights of well-known peaks as reported to the nearest metre, wherever available, while the heights of mountain ranges etc. are reported in tens of metres. In the description the figures given for depths for a month indicate the total amount of snowfall which occurred during that month.

Winter Period - January and February

I - JAMMU AND KASHMIR

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - Snowfalls were experienced on seven days in January, out of which there was a spell of five days from 23rd to 27th January. The total precipitation in the month was about 14 cm. It snowed on fourteen days in February, the dates being 3rd-4th, 6th-8th, 12th, 14th, 16th-21st and 28th. The total precipitation in the month was about 84 cm. The whole area including mountains such as Apharwat and Handibal received snowfalls in both the months. The amounts of snow accumulation were about 1.5 m. in January and 2.7 m. in February.

The snowfall was normal during the period.

SRINAGAR DISTRICT

Srinagar (1585 m.) - There were three light snowfalls in January, the total precipitation being about 1 cm. In February the snowfalls were confined to the high mountains only, the total precipitation being about 5 cm. The accumulation of snow on high peaks and passes was reported to be normal at the end of the period.

The snowfall was below normal during the period.

DODA DISTRICT

Patnitop (Batote) (2033 m.) - It snowed on 6th January and again on 19th and 20th February. The snowfalls occurred on Patnitop, Sansar range and Naroti hills. The depths of snowfall were 10 cm. in January and 20 cm. in February.

The snowfall was normal during the period.

UDHAMPUR DISTRICT

Banihal (1624 m.) - In January snowfall occurred on 6th (7.4 mm.), 9th (0.2 mm.), 26th (0.4 mm.) and 27th (0.1 mm.), total amount being 8.1 mm. In February, snow fell on 20th alone, the amount being 16.0 mm.

LADAKH DISTRICT

Khangral - Snowfalls were reported to have occurred in both the months, the depths being about 1 cm. in January and 2 cm. in February at the station proper. The depths of snowfall on Namika and Fatola varied from 1.2 m. to 1.5 m. in January and 91 cm. to 1.2 m. in February.

The snowfall was reported to be normal during the period.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range)(2564 m.) - It snowed on the 6th and again on 24th, 25th, and 27th January. In February it snowed on the 3rd, 4th, 7th, 9th, 17th to 19th, 21st, 22nd and 28th February. The total depths of snow were 53 cm. in January and 1.6 m. in February. The snowfalls were experienced at the elevations of 1520 m. in January and of 2130 m. in February. The highest snowfall in a day was on 17th February, the amount being 30 cms.

The snowfall was below normal during the period.

Churah

Tissa (1570 m.) - The snowfalls occurred on the 8th and 9th January, at the elevations above 1520 m., the total depth being 18 cms. No snow fell during February.

The snowfall was below normal during the period.

Bhandal (1730 m.) - It snowed on the 6th, 8th, 9th, 27th and 28th January at the elevation above 1520 m., the total depth being about 29 cms. No snow fell during February.

The snowfall was below normal during the period.

Chamba

Chamba (924 m.) - There were no snowfalls at the station proper in both the months. However, the adjoining peaks and passes received snowfalls in both the months, the depths of snowfall and the amounts of snow accumulation on the well-known passes of the region were reported as under :-

Name of Pass	Accumulation	
	January	February
Sach (4420 m.)	1.2 m.	1.8 m.
Kalichho (5000 m.)	2.4 m.	3.0 m.
Padhri (3600 m.)	61 cm.	61 cm.

The snowfall was below normal during the period.

Ludrera (924 m.) - No snow fell during the period.

Bhanota (914 m.) - No snow fell during the period.

Upper Chamba Range

Chhattrari (1793 m.) - The station proper experienced snowfalls on the 8th and 26th January, the total depth being about 6 cms. No snow fell at the station proper during February. The high peaks in the range, such as Kanikote, Sabrew and Baliani received snowfalls on 8th-9th, 27th and 28th January and on 8th-9th, and 21st-22nd February, the total depths being 1.8 m. in January and 91 cms. in February. The amounts of snow accumulation at these peaks at the ends of January and February were reported as follows :-

Name of Peak	Accumulation	
	January	February
Baliani	2.1 m.	1.8 m.
Kanikote	1.8 m.	1.5 m.
Sabrew	2.1 m.	1.8 m.

The snowfall was normal during the period.

Bhattiyat

Kalatop (Dalhousie Range)(2414 m.) - It snowed on six days each in January and February, the dates being quiet identical viz. 5th, 7th-8th and 25th-27th in both the months. The total depth was also 43 cms. in each of the months.

The snowfall was below normal during the period.

Chowari (1021 m.) - No snow fell during the period.

Bathree (1372 m.) - No snow fell during the period.

Bharmaur Range

Bharmaur (2155 m.) - The snowfalls were experienced on 9th and 27th-28th January and on 9th, 13th, 20th and 22nd February, the total depths being 8 cms. and 17 cms. respectively.

The snowfalls occurred at elevations above 1520 m. in January and 2130 m. in February.

The snowfall was below normal during the period.

MAHASU DISTRICT

Chopal (2342 m.) - The station did not experience any snowfall in January. The report for February was not received.

Phancha (Pandra Bis Range) (2271 m.) - The snowfalls were experienced in both the months, the total depths being about 4 cms. in January and 3 cms. in February.

The snowfall was below normal during the period.

Junga (1989 m.) - No snow fell during the period.

Rampur (1067 m.) - The snow-storms were experienced in both the months throughout the area of the tehsil. The snowfalls occurred on 6th January and again on 19th and 20th February, the depths of which could not be estimated. The snowfall occurred at elevations above 1520 m. in both the months. The snow accumulation on the high peak such as Daranghati was estimated to be about 15 cm. at the end of each month.

The snowfall was normal during the period.

Kumarsain (1388 m.) - The snowfalls were experienced on the high peaks in the region in both the months. The total depths on Hatu peak were 41 cms. in January and 61 cm. in February.

The snowfall was below normal in January and slightly above normal in February.

Theog (2286 m.) - The total depth of snowfall recorded in January was about 5 cms. No snow fell during February. The amounts of snow accumulations on the well-known peaks of Kanagi and Tir Mahasu were 10 cm. and 20 cms. respectively in January.

The snowfall was below normal during the period.

Kotkhai (1676 m.)-- The station proper did not experience any snowfall during the period. The adjoining peaks such as Khara Pathar (2590 m.), Naira (2290 m.) Joshla (2440 m.), Mundroo (2440 m.) and Baghi (2740 m.) received snowfalls in February on 5 days, the total depth on each of them being about 53 cms. The snowfall was reported to be useful to the standing crops.

The snowfall was below normal in January and was normal in February.

Lower Pibar Range

Rohru (1524 m.) - The snowfalls occurred at elevations above 300 m. in January and above 1830 m. in February. The total depths were 30 cms. in January and 10 cms. to 60 cms. in February depending on heights upto 4270 m.

The snowfall was below normal during the period.

Arki (1219 m.) - No snow fell during the period.

Solan (1530 m.) - No snow fell during the period.

Jubbal (1891 m.) - No snow fell during the period.

Mashobra - Towards the end of January, a little snowfall was experienced the depth being less than 1 cm. The snow accumulation was estimated to be about 91 cms. at the end of the month. No snow fell during February.

The snowfall was below normal during the period.

KINNAUR DISTRICT

Kilba-Kailash Range

Kilba (1829 m.) - The station experienced snowfalls on the 6th January only, the total depth being about 8 cms. No snow fell during February.

The snowfall was below normal during the period.

Sangla (2591 m.) - Snowfalls occurred on 5th and 27th January and again on 8th, 16th to 22nd February, the total depths being about 25 cms. in January and about 63 cms. in February.

The snowfall was below normal in January and above normal in February.

KULU DISTRICT

Banjar (Inner Seraj Sub-Tehsil)(640 m.) - The total depths of snowfall at the end of the months January and February on the well-known peaks were reported as under :-

Name of Peak	Depth of snowfall	
	January	February
Sakim	15 cms.	91 cms.
Lambri	15 cms.	1.1 m.
Gargarasan	46 cms.	1.7 m.
Shepakaru	30 cms.	1.5 m.
Bashelu	15 cms.	1.2 m.
Pallach	30 cms.	1.5 m.
Tirth	30 cms.	1.7 m.

The snowfall was below normal during the period.

Kulu (1218 m.) - The report for January was not received. The depths of snowfall and the amounts of snow accumulation at the end of February on the well-known locations were reported as under :-

Name of location	Depth of snowfall in February	Accumulation in February
Hamta	1.8 m.	2.0 m.
Rotang	1.5 m.	1.8 m.
Watshai	1.2 m.	1.2 m.
Majghar	1.2 m.	1.4 m.
Chandranina	91 cms.	1.1 m.
Lahari Aryut	61 cms.	61 cms.
Sari	61 cms.	76 cms.
Umu	46 cms.	61 cms.
Walwati	30 cms.	46 cms.
Mubhag	30 cms.	46 cms.

The snowfall was below normal in February.

MANDI DISTRICT

Nachan Forest Division

Snowfall occurred on 27th January at elevations above 1830 m., the depth being 5 cm. The snow line descended to height 1520 m. The depth of snow at the well-known peak of Shikari Devi was 30 cm. The report for February was not received.

The snowfall was below normal in January.

SIRMUR DISTRICT

No snow fell during the period.

Spiti Sub-division

Snowfall occurred on 6th January. The depth was approximately 2.5 to 10.2 cm. In February, snowfall occurred from 16th to 21st, the depth being approximately 0.6 to 1.2 m.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT

No snow fell during the period.

GARHWAL DISTRICT

No snow fell during the period.

ALMORA DISTRICT

The total depths of snowfall and the amounts of snow accumulation at the ends of the months on the well-known peaks of Malla Danpur were reported as under :-

Name of Peak	Depth of Snowfall		Accumulation	
	January	February	January	February
Kautela	8 cm.	13 cm.	3 cm.	3 cm.
Kafini	20 cm.	30 cm.	20 cm.	18 cm.
Bankatia	81 cm.	91 cm.	2.0 m.	2.1 m.
Nanda Devi	91 cm.	1.1 m.	2.7 m.	2.7 m.
Pindar	86 cm.	91 cm.	2.0 m.	2.1 m.
Sunderdhunga	66 cm.	76 cm.	1.7 m.	1.8 m.

The snowfall was below normal during the period.

NAINITAL DISTRICT

Mukteswar (2310 m.) - Light continuous snowfall occurred on the 3rd January, the total depth being about 3 cm. The snowfall was experienced on all the surrounding hills such as Nainital, Ramgarh, Gagarh etc. No snow fell during

February.

The snowfall was below normal during the period.

Pre-Monsoon Period - March to May

I - JAMMU AND KASHMIR

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - Snowfalls were reported to have occurred on sixteen days in March and on seven days in April, the dates being 1st to 3rd, 10th to 13th, 15th to 17th, 20th, 21st, 24th to 26th and 31st in March and 1st to 5th and 7th and 8th in April. The total precipitation was 58 cm. in March and 35 cm. in April. The snow accumulation was 1.5 m. at the end of March and about 30 cm. at the end of April. There were occasional snowfalls in May leaving enough accumulation at the end of May.

The snowfall was normal during the period.

SRINAGAR DISTRICT

Srinagar (1585 m.) - The snowfalls were experienced in the valley on the 25th March only. In April and May snowfalls were confined to adjoining peaks and passes only. The total precipitation recorded was about 12cm. in March, 8 cm. in April and about 5 cm. in May. The depth of snowfall during the period could not be estimated. There was no accumulation of snow at the end ofthe period.

The snowfall was normal during the period.

Qazigund (1690 m.) - The reports for March and April were not received. Slight snowfalls occurred on the adjoining peaks in May. The snow accumulation was reported to be below normal during May.

DODA DISTRICT

Patnitop (Batote) (2033 m.) - The station proper experienced snowfalls on the 12th, 13th, 25th and 26th March, the total depth being 94 cm. The snowfalls extended to the high peaks such as Patnitop, Sansar, Doda, Nabota and Batote.

No snowfall occurred in April and May.

The snowfall was above normal in March.

LADAKH DISTRICT

Dras (3066 m.) - The reports for March and April were not received. The depth of snow recorded during May was about 80 cm. There was about 50 cm. of snow accumulation on peaks and passes at the end of the period.

The snowfall was above normal in May.

Leh (3514 m.) - The report for March was not received. No snowfalls were experienced at the station proper during April. However, it snowed at the elevations above 3960 m. in April, the depth being about 46 cm. The snowfalls were reported to have occurred on 22nd and 23rd May at elevations above 3960 m. and on the 25th May at the station proper, the depth being 46 cm. The amount of snow accumulation was about 1.2 m. in April and about 1.2 m. to 1.5 m. in May.

The snowfall was below normal in April and May.

Khangral - The station witnessed snowfalls on fourteen days in March, on three days in April and on several occasions in May. The depths of snow at the station proper were about 1 cm. each in March and April and May while those at Namika and Fatola were about 1 cm. in March, about 91 cm. to 1.5 m. in April and about 91 cm. to 1.2 m. in May.

The snowfall was below normal during the period.

UDHAMPUR DISTRICT

Banihal (1624 m.) - In March snowfall occurred on 16th (16.8 mm.), 23rd (8.0 mm.) and 26th (60.0 mm.), total amount being 84.8 mm. No snow fell in April and May.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range)(2564 m.) - It snowed on seven days in March, the dates being 1st, 11th to 13th, 16th, 17th and 26th, the total depth being about 1.6 m. The lowest height to which snowfalls occurred was 2130 m. No snow fell in April and May.

The snowfall was above normal in March and normal in April and May.

Churah

Tissa (1570 m.) - It snowed on 26th March, the depth being about 15 cm. No snow fell in April and May.

The snowfall was below normal in March and normal in April and May.

Bhandal (1730 m.) - Snowfalls occurred on the 17th and 26th March, the depth being about 15 cm. No snow fell in April and May.

The snowfall was below normal in March and normal in April and May.

Chamba

Chamba (924 m.) - No snowfalls occurred at the station proper throughout the period. The snowfalls were confined to the elevations above 2130 m. in March, above 2900 m. in April and above 3660 m. in May. The depths of snowfall and the amounts of snow accumulation on some well-known passes at the ends of April and May were reported as under :-

Name of Pass	Depth of Snowfall			Accumulation		
	March	April	May.	March	April	May
Sach	1.4 m.	0	0	11 cm.	1.5 m.	61 cm.
Kalichho	1.8 m.	0	0	15 cm.	1.8 m.	1.2 m.
Padhri	4 cm.	0	0	4 cm.	2.1 m.	1.2 m.

The snowfall was below normal during the period.

Ludrera (924 m.) - No snow fell during the period.

Bhanota (914 m.) - No snow fell during the period.

Upper Chamba Range

Chhattrari (1793 m.) - It snowed on 25th and 26th March at elevations above 2130 m., the total depth being 20 cm. and on 16th, 25th and 26th March on the peaks of Kanikote, Sabrew and Baliani, the depth there being 61 cm. No snow fell during April and May.

The snowfall was above normal during March.

Bhattiyat

Kalatop (Dalhousie Range)(2414 m.) - The snowfalls were experienced on 25th, 26th March at elevations above 2133 m., the total depth being 27 cm. No snow fell during April and May.

The snowfall was below normal in March.

Chowari (1021 m.) - No snow fell during the period.

Bathree (1372 m.) - No snow fell during the period.

Bharmaur

Bharmaur (2155 m.) - Snowfall occurred on 17th, 26th and 27th March, the total depth being 73.7 cm. No snowfall occurred in April and May. The snowfall was normal in March. The snowfall descended to the elevation of above 2130 m. in March, 2900 m. in April and 3660 m. in May.

Dalhousie (1959 m.) - Snowfalls occurred at elevations above 2440 m. The snow accumulated to the extent of 1.8 m. to 2.4 m. The accumulation of snow was reported to be normal.

Spiti Sub-Division

In March, the total depth of snow was reported to be 0.3 m., in April no snowfall occurred and in May again about 0.6 m. total depth was estimated.

III - UTTAR PRADESH

ALMORA DISTRICT

Snowfalls and accumulations on the mountain peaks of Patti Malla Danpur were as under :-

Name of Peak	Total snowfall (Cm.)			Accumulation (Cm.)		
	March	April	May	March	April	May
Kautela	152.4	0	0	1.3	61.0	0
Kafini	228.6	30.5	0	11.4	152.4	91.4
Bankatia	274.3	91.4	30.5	213.4	213.4	182.9
Nanda Devi	304.8	121.9	61.0	274.3	304.8	243.8

Name of Peak	Total snowfall (Cm.)			Accumulation (Cm.)		
	March	April	May	March	April	May
Pinder Peaks	243.8	91.4	30.5	213.4	213.4	182.9
Sunderdhunga	243.8	61.0	30.5	167.6	182.9	152.4

The snowfall was above normal for the season.

NAINITAL DISTRICT

Mukteswar (2310 m.) - Light to moderate snow occurred on 23rd and 26th March, depths being 2.0 and 2.5 cm. respectively.

No snow fell in April and May.

The snowfall was below normal in March.

Tehri Garhwal - There was no snowfall throughout the district in the season.

Southwest Monsoon Period - June to September

June - July

I - JAMMU AND KASHMIR

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - Snowfall occurred on 4th, 14th, 15th and 16th June on Apharwat and Handibal mountains. Total precipitation of the month amounted to about 62.4 mm. In July, it occurred on 24th and 25th and the total precipitation amounted to 59.4 mm.

The snowfall was below normal in June and July.

UDHAMPUR DISTRICT

Banihal (1630 m.) - No snowfall occurred during the period.

SRINAGAR DISTRICT

Srinagar (1585 m.) - No snowfall occurred in the month of June and July. By the end of July, part of snow on high mountains and peaks had melted away.

Qazigund (1690 m.) - No snowfall occurred during the period.

LADAKH DISTRICT

Leh (3514 m.) - No snowfall occurred during the period at the station; however snow of the depth of about 90 cm. was sighted at about 6000 m. height.

Khangral - No snowfall was experienced at the station proper during the period. Snowfalls were confined to high peaks, such as Namikala and Fotula in both the months, the total depths being 15 cm. and 30 cm. in June and July respectively.

The snowfall was normal during the period.

DODA DISTRICT

Patnitop (Batote)(2033 m.) - No snowfall occurred in June and July.

II - PUNJAB AND HIMACHAL PRADESH

BHATTIYAT

Bhattiyat Range - No snowfall was experienced during the period.

Trehta Range - No snowfall occurred during the period.

Bharmaur Range - No snowfall occurred during the period.

MAHASU DISTRICT

Solan (1530 m.) - No snowfall was experienced in June. Report for July was not received.

Kilba (1829 m.) - No snowfall was experienced during the period.

Sangla (2591 m.) - No snowfall was experienced during the period.

SIMLA DISTRICT

No snowfall occurred during the period.

Spiti Sub-Division - No snowfall was experienced during the period.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT

No snowfall was experienced during the period.

ALMORA DISTRICT

The total depthsof snowfall and amounts of accumulation at the end of the months on some well-known peaks were as under :-

Name of Peaks	Depth of Snowfall		Accumulation	
	June	July	June	July
Kautela	0	0	0	0
Kafini	0	0	61 cm.	46 cm.
Bankatia	38 cm.	30 cm.	152 cm.	152 cm.
Nanda Devi	61 cm.	61 cm.	213 cm.	213 cm.
Pindar Peak	38 cm.	30 cm.	152 cm.	152 cm.
Sundardhunga	30 cm.	30 cm.	122 cm.	122 cm.

Thesnowfall was above normal in June-July.

NAINITAL DISTRICT

Mukteswar (2310 m.) - No snowfall occurred during the period.

August - September

I - JAMMU AND KASHMIR

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - No snowfall was observed in August. Snowfall was observed on 25th and 26th in September. The total precipitation was 42.5 mm.

The snowfall was below normal in both the months.

SRINAGAR DISTRICT

Srinagar (1585 m.) - There was no snowfall during the period at the place. However, in September a little snow cover was noticed on high peaks.

Qazigund (1690 m.) - No snowfall occurred during the period.

LADAKH DISTRICT

Leh (3514 m.) - No snowfall occurred during the period.

Khangral - During August, snowfall was experienced at the station. Estimated depths of snowfall on Namikala and Fotula peaks was about 30 cm. to 60 cm. During September snowfall was observed three times and the depth was 1 cm., while it was about 30 cm. to 60 cm. on the peaks and passes Namikala and Fotula.

The snowfall in August and September was normal.

UDHAMPUR DISTRICT

Banihal (1624 m.) - No snowfall was experienced by the station during the period.

II- PUNJAB AND HIMACHAL PRADESH

MAHASU DISTRICT

Chopal (2342 m.) - No snowfall occurred during the period.

KINNAUR DISTRICT

No snowfall occurred during the period.

Kilba (1829 m.) - No snowfall occurred during the period.

Sangla (2591 m.) - No snowfall occurred during the period.

SIMLA DISTRICT

No snowfall occurred during the period.

Spiti Sub-Division - No snowfall occurred during August and September.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT - No snowfall occurred during the period.

ALMORA DISTRICT

The total depths of snowfall and the amounts of snow accumulation on some well-known peaks of Patti Malla Danpur were reported as under .-

Name of Peak	Depth of Snowfall August	Accumulation August
Kautela	5 cm.	0
Kafini	25 cm.	1.1 m.
Bankatia	8 cm.	1.6 m.
Nandadevi	15 cm.	2.9 m.
Pinderpeak	13 cm.	1.9 m.
Sundardhunga	10 cm.	1.6 m.

No report was received for September. In August the snowfall was above normal.

NAINITAL DISTRICT

Mukteswar (2310 m.) - No snowfall occurred during the period.

Post-Monsoon Period - October to December

I - JAMMU AND KASHMIR

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - In all, sixteen snowfalls were reported in the month of October, out of which 14 were on Handibal and Apharwat mountains and 2 in the whole area of Gulmarg.

Total precipitation was 108.3 mm.

Nine snowfalls were observed during the month of November, it being twice on Handibal and Apharwat and 7 times in whole of Gulmarg. Total precipitation in the month was 29.4 mm.

Eleven snowfalls were reported to have occurred in the month of December having been experienced throughout Gulmarg area including the mountain tops of Handibal and Apharwat. The total precipitation of the month was 185.0 mm.

Snowfall was reported as above normal during the period.

SRINAGAR DISTRICT

Srinagar (1585 m.) - There was no snowfall in the month of October. The snowfall on high passes and peaks was reported to be of depth of few centimetres.

There was no snowfall at the station proper during November. However, it rained in the valley and it snowed on surrounding mountains and the snowline descended to elevation of 3048 m. The total precipitation recorded was 9 mm. In the month of December, the snowfall was observed three times. It snowed heavily on 26th and 27th. The total precipitation for the month was recorded as 16 cm. The snowline descended down to the level of 1524 m. and

it was the lowest of the season. The snow accumulated at Srinagar proper to the thickness of 30 cm. and on the well-known peaks the snow accumulation was the heaviest of the season.

Qazigund (1690 m.) - No snowfall was observed during the month of October. In November, a light snowfall occurred on 8th, but no accumulation was reported. December experienced 7 occasions of snow of light to moderate in intensity. Snow accumulation was also visible on surrounding mountain tops, passes and valleys.

The snowfall was above normal for November and below normal for December.

DODA DISTRICT

Patnitop (Batote)(2033 m.) - For October no report was received. In November the snowfalls started with heavy rains. Patnitop, Samsar range, Doda hills and Troata peaks also experienced snowfalls. In December heavy snowfall occurred , accompanied by rain. Actual depth of snow was 38 cm.

The snowfall was above normal in December.

LADAKH DISTRICT

Dras (3060 m.) - No snowfall report was received for the months of October and November. In December, on 3rd, snowfalls occurred, the depth being 50 cm., on 14th snowfall occurred heavily for three hours, the depth of the fall being 50 cm. and the amount of snow on well-known peaks was 80 cm. On 24th and 27th there was snowfall, the depths being 30 cm. on each occasion.

Leh (3514 m.) - Reports for October and November were not received. There wer snowfalls on 27th and 28th in December. The depth of the snow was 15 cm. The peaks and passes were bound by snow, the depth of which was reported as 91 cm.

Khangral - Snowfall was observed three times during the month of October. The depth of the snow was about 30 cm. The snowfall was also visible in the passe and on the peaks of Namikala and Fotula and its depths respectively were 46 cm and 61 cm.

In November also, the snowfall was reported to have occurred 3 times, the depth being 15 cm. At Fotula it was 30 to 61 cm and 30 to 46 cm at Namikala. In December, snowfalls were observed on three occasions. The depth of the snow was reported as 27 cm. Well known peaks and passes such as Namikala and Fotula were covered with snow of depths 76 cm. and 91 cm. respectively.

UDHAMPUR DISTRICT

Banihal (1624 m.) - There was no snowfall in the months of October and November. Snowfall in December was on 3rd and on 5 days continuously from 24th onwards the amount being 73.5 mm and 373.0 mm respectively.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Reports for October and November were not received. That for December is as given in the following table :-

Station with Height (a.s.l.)	Dates of Snowfall	Total depth of snowfall	Depth of Snowfall on well-known passes	Lowest height of Snowline
Chamba (924 m.)	2,3,4,14,24 to 27 and 29	-	1.52 m.	1524 m.
Bhandal (1730 m.)	2,4,24,27 and 28	38.1 cm. (Below normal)	0.84 m.	1728 m.
Chowari (1021 m.)	24,27 and 28	-	0.76 m.	1524 m.
Bharmour (2155 m.)	23,24,26 and 27	30.5 cm. (Below normal)	1.52 m.	2438 m.
Tissa (1570 m.)	2,3,23,26 and 27	30.5 cm. (Below normal)	1.52 m.	1554 m.
Kilar (2564 m.)	14,24,25,27,28 and 30	94.0 cm. (Above normal)	1.83 m.	2560 m.

No information is available for the following stations :- Ludrera (924 m.); Chhatrari (1793 m.); Bathri (1372 m.); Kala Top (2414 m.) and Bhanota (1067 m.)

The amounts of snow accumulations at the end of December on the well-known passes were as under :-

Name of Pass	Depth of Snow
Sach-Pangi	1.83 m.
Drati-Pangi	1.83 m.
Kalichho-Bharmaur	1.52 m.
Padhari-Bharmaur	0.54 m.

Upper Chamba Range :-

In October (dates 11, 25 and 26) snowfall in the form of hailstones was observed on the high peaks upto a depth of 1.2 m.

In November (on 14th, 22nd and 27th) snowfall in the form of hailstones was observed from afar upto the depth of 1.5 m. on the high peaks.

In December (on 3rd, 24th, 26th, 27th and 28th) snowfall was reported in the form of hailstones on the high peaks, upto a depth of 1.5 m.

The accumulations of snow during October, November and December on the nearby peaks were as follows :-

Name of Peak	Snow accumulations		
	October	November	December
Baliani	1.8 m.	2.1 m.	3.0 m.
Kankote	1.5 m.	1.8 mm.	2.7 m.
Sabrew	1.8 m.	2.1 m.	3.0 m.

The snowfall was above normal during the period.

Dalhousie (1959 m.) - There was no snowfall in November. There was snowfall on the 2nd and the 3rd in December. The total depth of the snowfall was 15 cm. There was snowfall again on the 23rd, the depth being 10 cm. for the period ending 1730 hours.

Bhattiyat

Bhattiyat Range - No snowfall report was received for the period.

Trehta Range - No snowfall report was available for the period.

Bharmaur - No snowfall report was available for the period.

MAHASU DISTRICT

Chopal (2342 m.) - Reports for October and November were not received. In December snowfall occurred on 3rd and 23rd and the respective depths were 20.3 cm. and 10.2 cm. On these dates snowfall on the peaks of Churdhar was reported as 76 cm. and 1.6 m. deep respectively.

The snowfall was above normal in December.

Arki (1219 m.) - No snowfall report was received for the period.

Solan (1530 m.) - No snowfall was recorded during October and November. Report for December was not received.

Kilba-Kailash Range

Kilba (1829 m.) - No snowfall was reported for October and November. In December snow fell on the 3rd only, the depth being less than 1.0 cm.

The snowfall during the period was below normal.

Sangla (2591 m.) - The station experienced snowfall only on the 26th October, the depth recorded being 18 cms. In November snow fell on 23rd, the depth recorded being 20 cms. There were 12 occurrences of snowfall in the month of December viz. on the 1st, 2nd, 4th, 13th, a spell from 21st to 27th and 29th, the total depth being 1.2 m. Heavy snowfall was reported in the last week of the month.

Snowfall for the period was above normal.

SIMLA DISTRICT

Simla (2202 m.) - There was no snowfall in October. In the month of November, accumulation of snowfall was recorded as 8 to 16 cms. on 22nd at Kufri and Mashobra Peaks - 9 to 13 kms. away from Simla.

There were five occurrences of snowfall during December at the station and on the surrounding peaks. On the 3rd and 4th December, snowfall in Simla and at Jakhoo Peak, the highest part of Simla, was from 5 cms. to 10 cms. Snowfall was recorded to be about 3 cms. on the 24th at both the places. On the 26th and 29th the snowfall recorded at both Mashobra and Kufri peaks, 9 kms. away from Simla, were 13 cms. and 8 cms. respectively.

Spiti Sub-Division

Snowfall occurred on 16th and 25th in October, depths being 2.5 to 7.6 cms. and 15.2 to 30.5 cms. respectively. In November, the depth was estimated to be 7.6 to 10.2 cm. on 22nd. In December, it occurred on 6th, 13th and 22nd-23rd, the depths estimated being 15.2 to 30.5 cms. on 6th and 5.1 to 15.2 cms. on 22nd-23rd, snowfall was meagre on 13th.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT

There was no snowfall during the period in the district.

GARHWAL DISTRICT

Snowfalls were reported to have occurred on the 15th and 16th December on hilly peaks above 1800 metres, the total depth varying from 5 cms. to 13 cms. There was no snowfall in October and November.

The snowfall was below normal during the period.

ALMORA DISTRICT

The depths of snowfall and the amounts of snow accumulation at the end of each month of the well known peaks of Malla Danpur were as under :-

Name of Peak	October	November	December
SNOWFALL			
Kautela	18 cm.	23 cm.	1.8 m.
Kafini	43 cm.	6 cm.	1.8 m.
Bankatia	86 cm.	1.1 m.	2.6 m.
Nandadevi	1.1 m.	1.3 m.	2.8 m.
Pindar Peak	1.0 m.	1.4 m.	2.6 m.
Sundardhunga	76 cm.	91 cm.	2.9 m.
ACCUMULATION			
Kautela	0	61 cm.	91 cm.
Kafini	1.1 m.	1.2 m.	1.4 m.
Bankatia	2.0 m.	2.1 m.	2.6 m.
Nandadevi	3.2 m.	3.3 m.	2.9 m.
Pindar Peak	2.2 m.	2.3 m.	2.7 m.
Sundardhunga	1.9 m.	2.0 m.	2.2 m.

The snowfall was above normal during the period.

NAINITAL DISTRICT

Mukteswar (2310 m.) - There was no occurrence of snowfall in the months of October and November.

The station had light to moderate continuous snowfall on the 23rd and 24th December, total duration being 18 hours. The depth of snow however, was 18 cms., as much of the snow melted away. Again light snowfall of 2 hours duration occurred on the 24th and 26th. The depth was negligible as most of the snow melted away. The snowfall extended to all the surrounding high peaks such as Nainital, Ramgarh, Gagarh etc. on the 24th December.

The snowfall in December was above normal.

DEHRA DUN DISTRICT

Mussoorie (2042 m.) - No snowfall occurred during the months of October to December.

SUMMARY

Winter Period - January and February :

Snowfall was slightly below normal in Jammu and Kashmir, and below normal in Punjab and Himachal Pradesh and Uttar Pradesh during the period.

Pre-monsoon period - March to May :

Snowfall was normal in Jammu and Kashmir on the negative side and in Uttar Pradesh it was on the positive side, while it was slightly below normal in Punjab and Himachal Pradesh.

Southwest Monsoon period - June to September :

For June - July : Snowfall for the period maybe taken as normal in Jammu and Kashmir and also in Punjab and Himachal Pradesh, while it was slightly above normal in Uttar Pradesh.

For August - September : Snowfall was slightly below normal in Jammu and Kashmir, and normal in both Punjab - Himachal Pradesh and Uttar Pradesh.

For the Southwest monsoon period (June - September) as a whole, snowfall may be considered normal for all the three regions viz. Jammu-Kashmir, Punjab-Himachal Pradesh and Uttar Pradesh, although the conclusion is based on meagre number of reports in respect of Punjab-Himachal Pradesh and Uttar Pradesh due, perhaps, to fewer falls of snow in the season than expected.

Post Monsoon Period - October to December :

Snowfall was normal in all the regions viz. Jammu and Kashmir, Punjab-Himachal Pradesh and Uttar Pradesh - on the positive side in Jammu and Kashmir, and on the negative in Punjab-Himachal Pradesh and Uttar Pradesh.

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NOTE :- It is not possible to adopt a single classification of seasons which will be satisfactory for the whole of India. The classification adopted in this publication is devised from the point of view of rainfall in the country.